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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant:	Chang		
Assignee:	Maxtor Corporation		
Title:	POSITIONER FOR PRECISELY MOVING AN E-BLOCK OF A DISK DRIVE		
Serial No.:	09/768,974	Filed:	January 23, 2001
Examiner:	Blouin, M.	Group Art Unit:	2653
Atty. Docket No.:	Q00-1101-US1		

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SUPPLEMENTAL APPEAL BRIEF
(37 C.F.R. § 1.193)

In response to the Office Action dated July 21, 2003, which reopened prosecution after an appeal was filed, Applicant submits this Supplemental Appeal Brief and requests reinstatement of the appeal under 37 C.F.R. § 1.193(b)(2)(ii).

This paper is submitted in triplicate.

The index of subject matter is as follows:

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Maxtor Corporation.

II. RELATED APPEALS AND INTERFERENCES

There are no other appeals or interferences that will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

Claims in the application are: 1-40

B. Status of All Claims

1.	Claims canceled:	NONE
2.	Claims withdrawn:	NONE
3.	Claims pending:	1-40
4.	Claims allowed:	NONE (claims 31-34, 36 and 40 are objected to)
5.	Claims rejected:	1-30, 35 and 37-39

C. Claims on Appeal

Claims on appeal are: 1-30, 35 and 37-39

IV. STATUS OF AMENDMENTS

No amendment has been filed after the outstanding Office Action dated July 21, 2003.

V. SUMMARY OF INVENTION

The present invention is generally directed to a positioner for a disk drive that precisely positions and maintains a data transducer on a target track of a storage disk (specification, page 1, lines 13-15).

Positioner 20 includes magnetic assembly 52 and conductor assembly 54 (specification, page 6, lines 29-30 and Fig. 2). Magnetic assembly 52 includes upper magnetic array 56A and lower magnetic array 56B (specification, page 7, lines 1-4 and Figs. 2-5). Conductor assembly 54 includes coil array 78 positioned between magnetic arrays 56A and 56B (specification, page 8, lines 6-8 and Figs. 2-3). Coil array 78 is a somewhat flat, generally D-shaped loop that includes a substantially linear first segment 80 and a curved arc-shaped second segment 82 (specification, page 8, lines 17-19 and Fig. 3).

First segment 80 extends substantially perpendicularly to longitudinal axis 43 of E-block 16 (specification, page 8, lines 19-22 and Fig. 3). First segment 80 includes first portion 84, second portion 86 and central portion 88 (specification, page 8, lines 24-25 and Fig. 3). First portion 84 and second portion 86 interact with magnetic fields 73 of magnetic arrays 56A and 56B (specification, page 8, lines 31-34).

Magnetic arrays 56A and 56B extend a first distance parallel to longitudinal axis 43, coil array 78 extends a second distance parallel to longitudinal axis 43, and the first distance is greater than the second distance (Fig. 3).

VI. ISSUES

The sole issue on appeal is whether claims 1-30, 35 and 37-39 are anticipated under 35 U.S.C. § 102(b) by *Tohkairin* (U.S. Patent 5,963,398).

VII. GROUPING OF CLAIMS

For the sole issue, the claims do not stand and fall together and are grouped as follows: (i) claims 13, 20, 23, 29 and 30, (ii) claims 24-28, 37 and 38, (iii) claim 35, (iv) claim 39, (v) claims 1-9, 11, 12, 14-19, 21 and 22, and (vi) claim 10.

VIII. ARGUMENTS

Claims 1-30, 35 and 37-39 are rejected under 35 U.S.C. § 102(b) as being anticipated by *Tohkairin* (U.S. Patent 5,963,398).

Tohkairin discloses a voice coil motor that includes movable coil 90, lower magnet 154 and upper magnet 156. Movable coil 90 includes right and left coil portions 90-1 and 90-2 and front and rear coil portions 90-3 and 90-4.

Movable coil 90 is a generally rectangularly shaped loop as shown in Figs. 14 and 27. Furthermore, movable coil 90 extends further along the longitudinal axis of the head stack assembly than does lower and upper magnets 154 and 156 as shown in Fig. 14.

Front and rear coil portions 90-3 and 90-4 do not interact with the magnetic field of lower and upper magnets 154 and 156:

> Fig. 14 shows the arrangement relation between the magnet and the movable coil in the VCM of the present invention and shows a state in which the upper yoke in the VCM is removed. The movable coil 90 of the actuator 26 is installed to the coil supporting plate 88 provided in the rear portion of the rotary shaft 86. In the movable coil 90, right and left coil portions 90-1 and 90-2 for the longitudinal direction of the actuator 26 become the portions of the coil effective length to obtain a rotational torque for a magnetic flux which is generated between the lower magnet 154 and and upper magnet 156 locating in the upper portion. On the other hand, with respect to front and rear coil portions 90-3 and 90-4 of the movable coil 90, even if a magnetic flux passes through such portions, no rotational torque is derived and a thrust force in the longitudinal direction of the actuator 26 is generated. Therefore, the front and rear coil portions 90-3 and 90-4 become the coil portions which don't generate any rotational torque. (Col. 23, line 57 to col. 24, line 7.)

Claims 13, 20, 23, 29 and 30 (Group I)

Claim 13 recites "the coil array being a generally D-shaped loop." Claims 20 and 23 recite similar limitations. *Tohkairin* fails to teach or suggest this approach. Movable coil 90 is not a generally D-shaped loop, as is clear from Figs. 14 and 27.

In sustaining this rejection, the Examiner asserts that "the coil array being a generally D-shaped loop including a first segment (Fig. 14 (90-3))" and "Tohkairin clearly shows a 'D-shaped' coil as part of the positioner in the disk apparatus." This is clearly erroneous. Movable coil 90 is not a generally D-shaped loop merely because front coil portion 90-3 is slightly narrower than rear coil portion 90-4. Rather, movable coil 90 is a generally rectangularly-shaped loop.

Claims 24-28, 37 and 38 (Group II)

Claims 24 and 37 distinguish over *Tohkairin* for the reasons set forth above for the Group I claims and further distinguish over *Tohkairin* on their own merits since they recite another limitation that is not disclosed by *Tohkairin.*

Claim 24 recites "the coil array includes a first segment and a second segment, the first segment is substantially linear and the second segment forms an arc." Claim 37 recites similar limitations. *Tohkairin* fails to teach or suggest this approach.

In sustaining this rejection, the Examiner refers to the "Examiner's Drawing" which labels front coil portion 90-3 as the first segment and rear coil portion 90-4 as the second segment. This is clearly erroneous. Since rear coil portion 90-4 (arc) is wider than front coil portion 90-3 (substantially linear), and rear coil portion 90-4 is significantly spaced from front coil portion 90-3 by right and left coil portions 90-1 and 90-2, this arrangement even less resembles a general D-shape than if rear coil portion 90-4 was construed as the substantially linear first segment and coil portions 90-1, 90-2 and 90-3 were construed as the arc second segment.

Claim 35 (Group III)

Claim 35 distinguishes over *Tohkairin* for the reasons set forth above for the Group I claims and further distinguish over *Tohkairin* on its own merits since it recites another limitation that is not disclosed by *Tohkairin.*

Claim 35 recites "the magnetic arrays extend a first distance parallel to a longitudinal axis of a head stack assembly that includes the data transducer, the coil array extends a second distance parallel to the longitudinal axis, and the first distance is greater than the second distance." *Tohkairin* fails to teach or suggest this approach. Lower magnet 154 and upper magnet 156 extend a first distance parallel to a longitudinal axis of a head stack assembly that includes the data transducer, movable coil 90 extends a second distance parallel to the longitudinal axis, and the first distance is smaller than the second distance, as is clear from Fig. 14.

In sustaining this rejection, the Examiner merely parrots the claim language and refers to Fig. 1. This is clearly erroneous.

Claim 39 (Group IV)

Claim 39 distinguishes over *Tohkairin* for the reasons set forth above for the Group II and III claims.

Claims 1-9, 11, 12, 14-19, 21 and 22 (Group V)

Claim 1 distinguishes over *Tohkairin* for the reasons set forth above for the Group I claims and further distinguishes over *Tohkairin* on its own merits since it recites another limitation that is not disclosed by *Tohkairin.*

Claim 1 recites "the coil array . . . including a first segment that is positioned substantially perpendicular to the longitudinal axis of the E-block, the first segment being adapted to interact with the magnetic field to move the E-block relative to the storage disk." Claims 14 and 21 recite similar limitatiions. *Tohkairin* fails to teach or suggest this approach. Right and left coil portions 90-1 and 90-2 are not substantially

perpendicular to the longitudinal axis of the E-block, and front and rear coil portions 90-3 and 90-4 do not interact with the magnetic field to move the E-block.

In sustaining this rejection, the Examiner merely parrots the claim language and refers to Fig. 27. This is clearly erroneous.

Claim 10 (Group VI)

Claim 10 distinguishes over *Tohkairin* for the reasons set forth above for the Group I claims and further distinguishes over *Tohkairin* on its own merits since it recites another limitation that is not disclosed by *Tohkairin.*

Claim 10 recites "the only portion of the coil array that interacts with the magnetic field of the magnet assembly when the coil array is electrically excited is positioned substantially perpendicular to the longitudinal axis of the E-block." *Tohkairin* fails to teach or suggest this approach. Right and left coil portions 90-1 and 90-2 are not substantially perpendicular to the longitudinal axis of the E-block, and front and rear coil portions 90-3 and 90-4 do not interact with the magnetic field to move the E-block.

In sustaining this rejection, the Examiner merely parrots the claim language and refers to Fig. 27. This is clearly erroneous.

Claims 1-30, 35 and 37-39 (Groups I-VI)

Under 35 U.S.C. §102, anticipation requires that each and every element of the claimed invention be disclosed in the prior art. *Akzo N.V. v. United States International Trade Commission*, 1 USPQ 2d 1241, 1245 (Fed. Cir. 1986), *cert. denied*, 482 U.S. 909 (1987). That is, the reference must teach every aspect of the claimed invention. M.P.E.P. § 706.02, page 700-20 (August, 2001).

Tohkairin fails to teach or suggest that movable coil 90 has a general D-shape, or that front and rear coil portions 90-3 and 90-4 interact with a magnetic field, or that lower and upper magnets 154 and 156 extend further along a longitudinal axis than movable coil 90.

For the reasons given above, Applicant respectfully submits that claims 1-30, 35 and 37-39 are in condition for allowance and respectfully requests that the outstanding rejections be overturned.

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on July 29, 2003.

D Sigmond — 7/29/03

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Date of Signature

Respectfully submitted,

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IX. APPENDIX OF CLAIMS INVOLVED IN THE APPEAL

1. A positioner for moving an E-block and a data transducer of a disk drive relative to a storage disk, the E-block having a longitudinal axis, the positioner comprising:

a magnet assembly producing a magnetic field; and

a coil array that couples to the E-block and is positioned near the magnet assembly, the coil array being a generally D-shaped loop including a first segment that is positioned substantially perpendicular to the longitudinal axis of the E-block, the first segment being adapted to interact with the magnetic field to move the E-block relative to the storage disk.

2. The positioner of claim 1 wherein the first segment is substantially linear.

3. The positioner of claim 2 wherein the first segment includes (i) a first portion positioned on one side of the longitudinal axis of the E-block, and (ii) a second portion positioned on an opposite side of the longitudinal axis E-block, wherein the first and second portions are adapted to interact with the magnetic field to move the E-block relative to the storage disk.

4. The positioner of claim 3 wherein the first and second portions are positioned substantially symmetrical relative to the longitudinal axis.

5. The positioner of claim 3 further comprising a control system, that directs current to the coil array to electrically excite the first portion and the second portion, the electrically excited first portion interacting with the magnetic field to generate a first force, and the electrically excited second portion interacting with the magnetic field to generate a second force.

6. The positioner of claim 5 wherein the first and second forces are substantially parallel to the longitudinal axis, and wherein the first force is substantially equal in magnitude and substantially opposite in direction to the second force.

7. The positioner of claim 3 wherein the magnet assembly includes an upper magnet array and a lower magnet array, and wherein the first and second portions are positioned substantially between the upper and lower magnet arrays.

8. The positioner of claim 3 wherein the first segment further includes a center portion, the center portion being positioned between the first and second portions, the center portion electrically connecting the first portion to the second portion, the center portion being positioned such that the center portion does not substantially interact with the magnetic field when the center portion is electrically excited.

9. The positioner of claim 3 wherein the coil array includes a second segment that is connected to the first segment, the second segment being positioned relative to the magnet assembly such that the second segment does not interact with the magnetic field when the second segment is electrically excited.

10. The positioner of claim 1 wherein the only portion of the coil array that interacts with the magnetic field of the magnet assembly when the coil array is electrically excited is positioned substantially perpendicular to the longitudinal axis of the E-block.

11. A head stack assembly including an E-block and the positioner of claim 1.

12. A disk drive including the positioner of claim 1.

13. A head stack assembly for moving a data transducer of a disk drive relative to a target track of a storage disk, the head stack assembly comprising:

an E-block having a longitudinal axis;

a transducer assembly secured to the E-block, the transducer assembly including a data transducer;

a positioner including (i) a magnet assembly producing a magnetic field, (ii) a coil array secured to the E-block and positioned near the magnet assembly, the coil array being a generally D-shaped loop including a first segment positioned substantially perpendicular to the longitudinal axis, the first segment including (i) a first portion, and (ii) a second portion; and

a control system that directs current to the coil array to move the data transducer relative to the target track.

14. The head stack assembly of claim 13 wherein the control system (i) directs current to the first portion to electrically excite the first portion, and (ii) directs current to the second portion to electrically excite the second portion;

wherein (i) the electrically excited first portion interacts with the magnetic field to generate a first force and (ii) the electrically excited second portion interacts with the magnetic field to generate a second force; and

wherein (i) the first force is substantially equal in magnitude to the second force and (ii) the first force is substantially opposite in direction to the second force.

15. The head stack assembly of claim 14 wherein the first and second forces are substantially parallel to the longitudinal axis.

16. The head stack assembly of claim 15 wherein the first portion and the second portion are positioned symmetrical to the longitudinal axis.

17. The head stack assembly of claim 16 wherein the first segment further includes a center portion, the center portion being positioned between and connected to the first portion and the second portion.

18. The head stack assembly of claim 17 wherein the center portion does not substantially interact with the magnetic field.

19. A disk drive including a storage disk, a drive housing and the head stack assembly of claim 16 movably secured to the drive housing.

20. A method for retrieving data from a target track on a rotating storage disk of a disk drive, the method comprising the steps of:

providing an E-block with a longitudinal axis;

securing a transducer assembly to the E-block, the transducer assembly including a data transducer;

providing a magnet assembly producing a magnetic field;

coupling a coil array to the E-block with the coil array being positioned near the magnet assembly, the coil array being a generally D-shaped loop including (i) a first portion; and (ii) a second portion, the first and second portions being perpendicular to the longitudinal axis, the first and second portions being positioned symmetrically about the longitudinal axis; and

directing current to the coil array to move the data transducer relative to the target track.

21. The method of claim 20 wherein directing current to the coil array includes directing current to the first portion and the second portion to generate a first force and a second force, respectively, wherein the first force is substantially equal in magnitude and opposite in direction to the second force.

22. The method of claim 21 wherein the first force and the second force are substantially parallel to the longitudinal axis.

23. A positioner for moving a data transducer relative to a storage disk in a disk drive, the positioner comprising:

a magnetic assembly including an upper magnetic array and a lower magnetic array; and

a coil array between the magnetic arrays, wherein the coil array is a generally D-shaped loop.

24. The positioner of claim 23 wherein the coil array includes a first segment and a second segment, the first segment is substantially linear and the second segment forms an arc.

25. The positioner of claim 24 wherein the first segment is substantially perpendicular to a longitudinal axis of a head stack assembly that includes the data transducer.

26. The positioner of claim 25 wherein the second segment forms an arc that is centered at a pivot center of the head stack assembly.

27. The positioner of claim 25 wherein the first and second segments are positioned symmetrically about the longitudinal axis.

28. The positioner of claim 25 wherein the first segment includes a first portion, a second portion and a center portion therebetween, the first and second portions are positioned between the magnetic arrays, and the center portion is not positioned between the magnetic arrays.

29. The positioner of claim 23 wherein the magnetic arrays each include an inner side, an outer side, and a pair of side wings therebetween, the inner side faces towards the data transducer and forms an arc, and the outer side faces away from the data transducer.

30. The positioner of claim 29 wherein the inner side forms an arc that is centered at a pivot center for the data transducer.

35. The positioner of claim 23 wherein the magnetic arrays extend a first distance parallel to a longitudinal axis of a head stack assembly that includes the data transducer, the coil array extends a second distance parallel to the longitudinal axis, and the first distance is greater than the second distance.

37. A positioner for moving a data transducer relative to a storage disk in a disk drive, the positioner comprising:

a magnetic assembly including an upper magnetic array and a lower magnetic array;

a coil array between the magnetic arrays, wherein the coil array is a generally D-shaped loop of wire wrapped into a plurality of turns that includes a first segment and a second segment, the first segment is substantially linear and the second segment forms an arc; and

a control system that electrically excites the coil array to interact with a magnetic field of the magnetic assembly.

38. The positioner of claim 37 wherein the first segment includes a first portion, a second portion and a center portion therebetween, the first and second portions are positioned between the magnetic arrays, and the center portion is not positioned between the magnetic arrays.

39. The positioner of claim 37 wherein the magnetic arrays extend a first distance parallel to a longitudinal axis of a head stack assembly that includes the data transducer, the coil array extends a second distance parallel to the longitudinal axis, and the first distance is greater than the second distance.